

Appl. No. 10/653,882
Amendment dated: July 28, 2005
Reply to OA of: May 13, 2005

Amendments to the Specification:

On page 4, please replace the third full paragraph after the Table with the following amended paragraph.

As indicated by the data in Table 1, under the condition that plasma gas composition $C_5F_8/O_2/Ar$ is used as a base, when CHF_3 is added, the uniformity is lifted, the critical dimension of the bottom of the contact hole is increased, but not enough. Besides, this composition has weak etching power for wafers, so that additional auxiliary is needed. When CH_2F_2 is added, the opening of the contact hole lessens, the critical dimension of the bottom of the contact hole is increased, but not enough. Furthermore, these two additions still cause accumulation of etching stop, because of the hydrogen contained in the respective two compounds. Accordingly, a preferable selection is pure fluorocarbon that is, perfluorocarbon.

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This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1 (currently amended). A method for forming high aspect ratio contact holes, comprising steps of:

providing a substrate;

forming a pad oxide layer on said substrate;

forming a pad nitride layer on said pad oxide layer;

forming an oxide layer on said pad nitride layer;

forming a mask of a predetermined pattern on said oxide layer; and

forming contact holes by plasma etching, the plasma etching using a plasma composition

comprising argon, oxygen, a first ~~fluorocarbon~~ perfluorocarbon and a second ~~fluorocarbon~~ perfluorocarbon, the

fluorine-to-carbon ratio of said second ~~fluorocarbon~~ perfluorocarbon being higher than that of [[the]] said first fluorocarbon perfluorocarbon.

2 (currently amended). The method as claimed in Claim 1, wherein said first ~~fluorocarbon~~ perfluorocarbon is C₅F₈.

3 (currently amended). The method as claimed in Claim 2, wherein the fluorine-to-carbon ratio of said second ~~fluorocarbon~~ perfluorocarbon is higher than 8:5.

4 (currently amended). The method as claimed in Claim 3, wherein said second ~~fluorocarbon~~ perfluorocarbon is C₃F₈.

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5(currently amended). A method for forming high aspect ratio contact holes, said method using plasma etching to open contact holes, and being characterized in that the plasma etching uses a plasma composition comprising argon, oxygen, a first ~~fluorocarbon~~ perfluorocarbon and a second ~~fluorocarbon~~ perfluorocarbon, the fluorine-to-carbon ratio of said second ~~fluorocarbon~~ perfluorocarbon being higher than that of [[the]] said first ~~fluorocarbon~~ perfluorocarbon.

6(currently amended). The method as claimed in Claim 5, wherein said first ~~fluorocarbon~~ perfluorocarbon is C_5F_8 .

7(currently amended). The method as claimed in Claim 6, wherein the fluorine-to-carbon ratio of said second ~~fluorocarbon~~ perfluorocarbon is higher than 8:5.

8(currently amended). The method as claimed in Claim 7, wherein said second ~~fluorocarbon~~ perfluorocarbon is C_3F_8 .